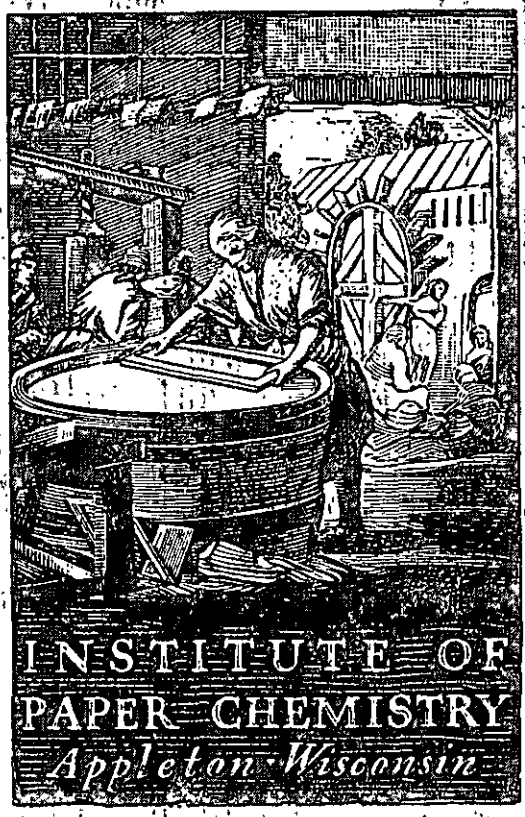

Institute of Paper Science and Technology
Central Files

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 140

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1959

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

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FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1959

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

PART I: PRESENTATION AND DISCUSSION OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY

In conjunction with the F.K.I. Continuous Baseline Study, The Institute of Paper Chemistry has been directed to identify the participating mills by means of a scrambled system of code letters. Under this system, which was initiated in Progress Report 105, each mill is identified by a code letter different from that used for the previous month.

During the month of January, ninety-two different sample lots of 42-lb. Fourdrinier kraft linerboard from fifteen different F.K.I. mills were processed at The Institute of Paper Chemistry. A tabulation of the number of samples classified according to mill may be seen in Table I.

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average is based on the results for the previous twelve months excluding the current period. Hence, in the case of the current report, it covers the period from January 1, 1958, to December 31, 1958. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

TABLE I

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	14
B	1
C	1
D	8
E	5
F	0
G	12
H	0
I	0
J	4
K	4
L	9
M	9
N	2
O	4
P	0
Q	4
S	8
T	7
Total	92

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--JANUARY 1 THROUGH JANUARY 31, 1959

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	43.7	12.1	112	360	403
B	42.5	12.8	109	342	386
C	43.4	12.7	108	313	351
D	43.2	12.4	109	310	361
E	43.3	12.3	115	317	371
F	No samples submitted.				
G	42.9	13.5	110	320	348
H	No samples submitted.				
I	No samples submitted.				
J	44.0	13.1	112	302	366
K	42.9	13.3	112	300	354
L	43.5	12.8	109	318	358
M	43.2	12.2	110	335	377
N	42.9	13.0	115	330	377
O	43.3	12.2	113	374	380
P	No samples submitted.				
Q	43.2	13.6	108	320	371
S	43.9	12.9	108	303	351
T	43.8	12.2	113	355	388
Current FKI Average:	43.3	12.8	111	327	370
Cumulative FKI Average:	43.3	12.7	112	332	376
FKI Index, %	100.0	100.8	99.1	98.5	98.4

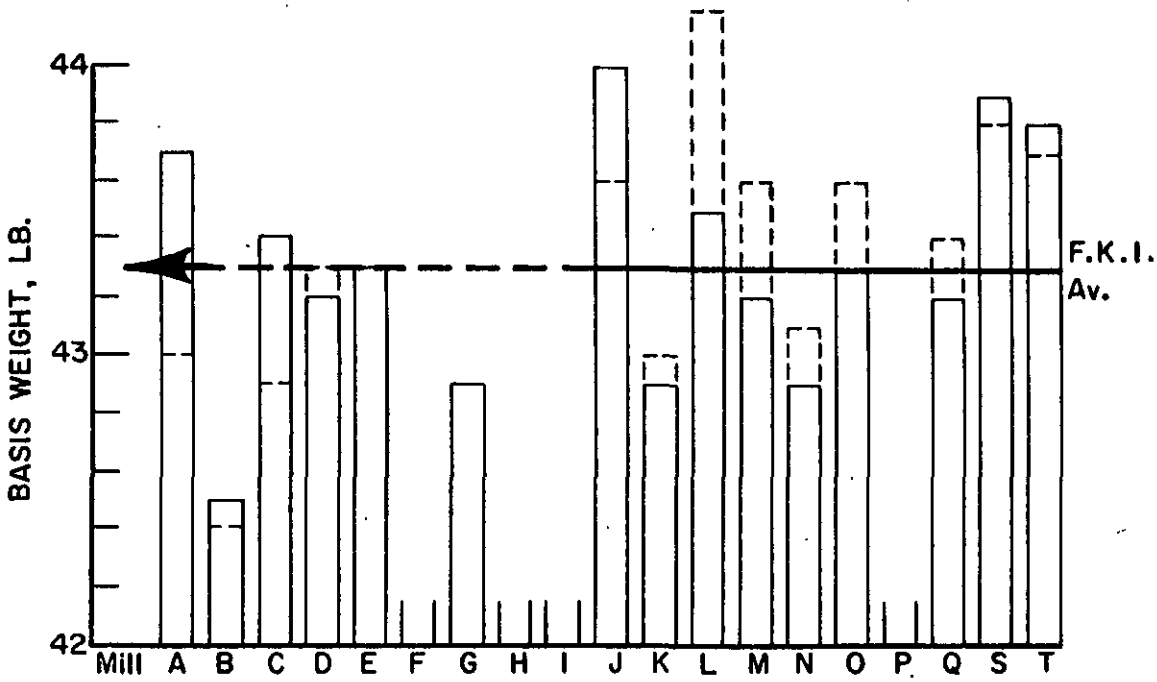

Figure 1

Comparison of Basis Weight Results for January, 1959

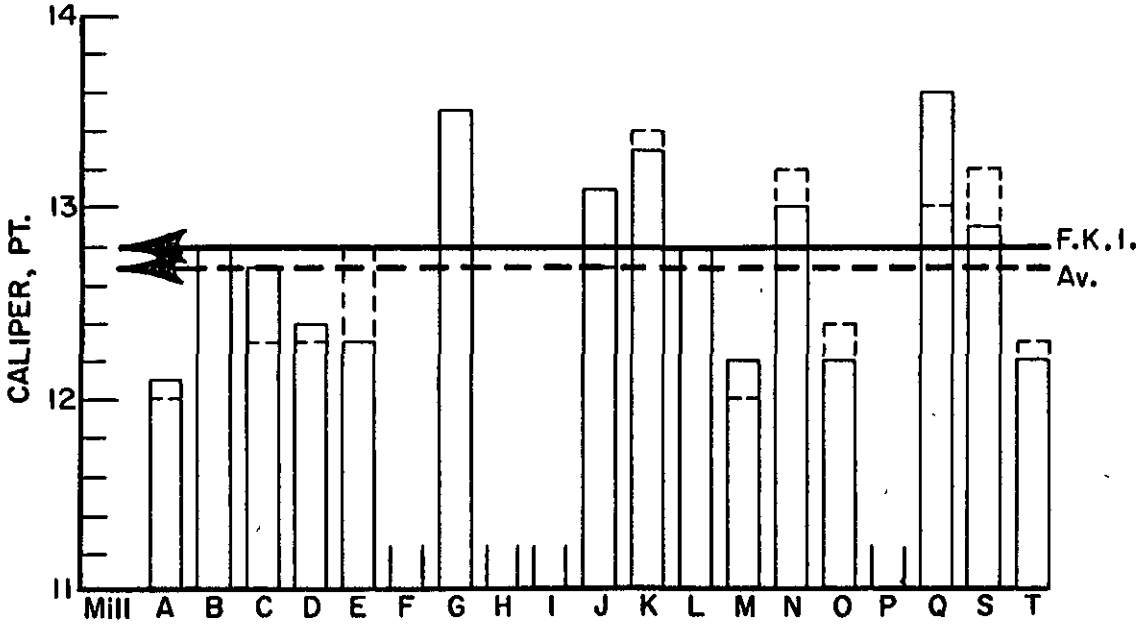

Figure 2

Comparison of Caliper Results for January, 1959

——— Current mill average

– – – – – Cumulative mill average

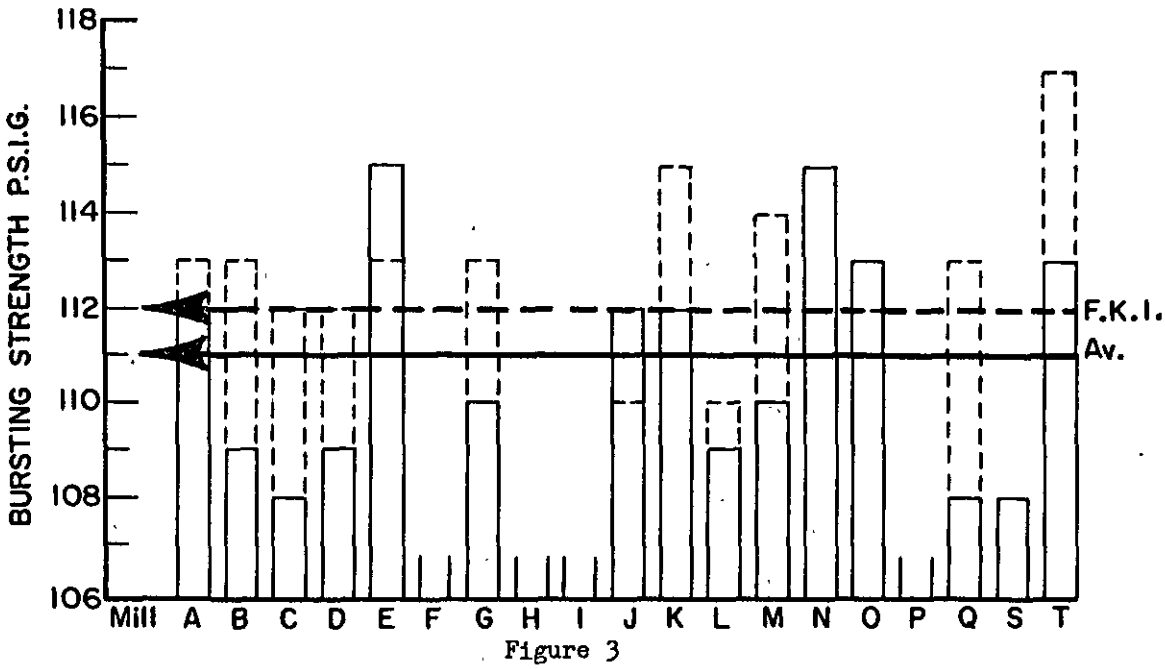

Figure 3

Comparison of Bursting Strength Results for January, 1959

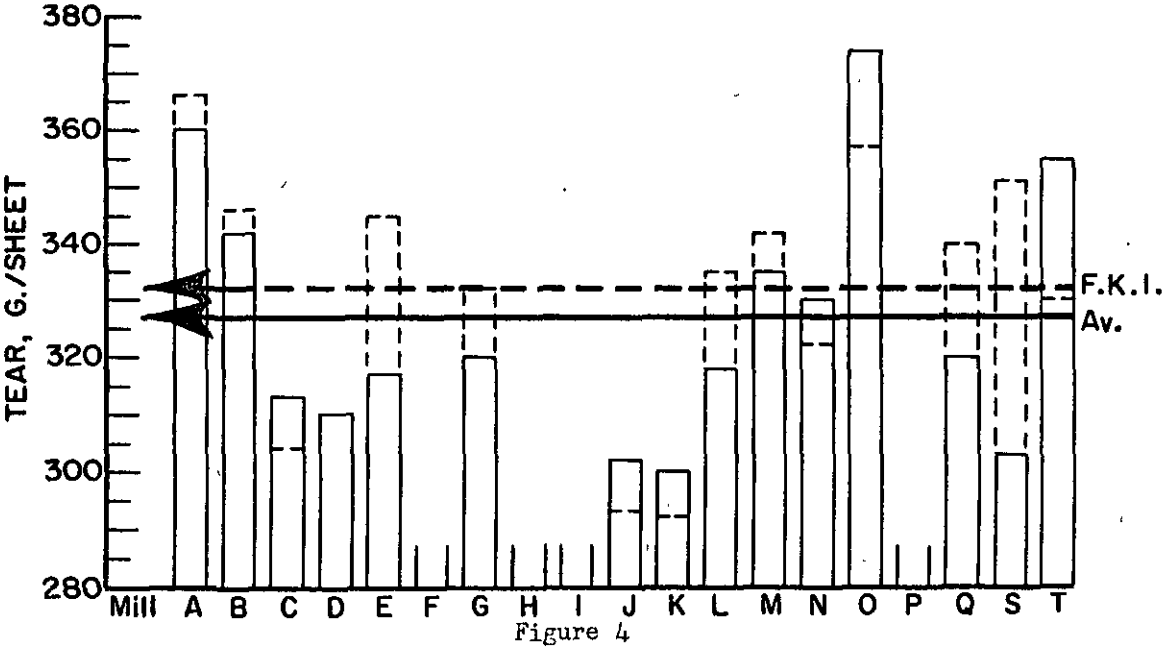

Figure 4

Comparison of Machine Direction Tear Results for January, 1959

——— Current mill average
– – – – Cumulative mill average

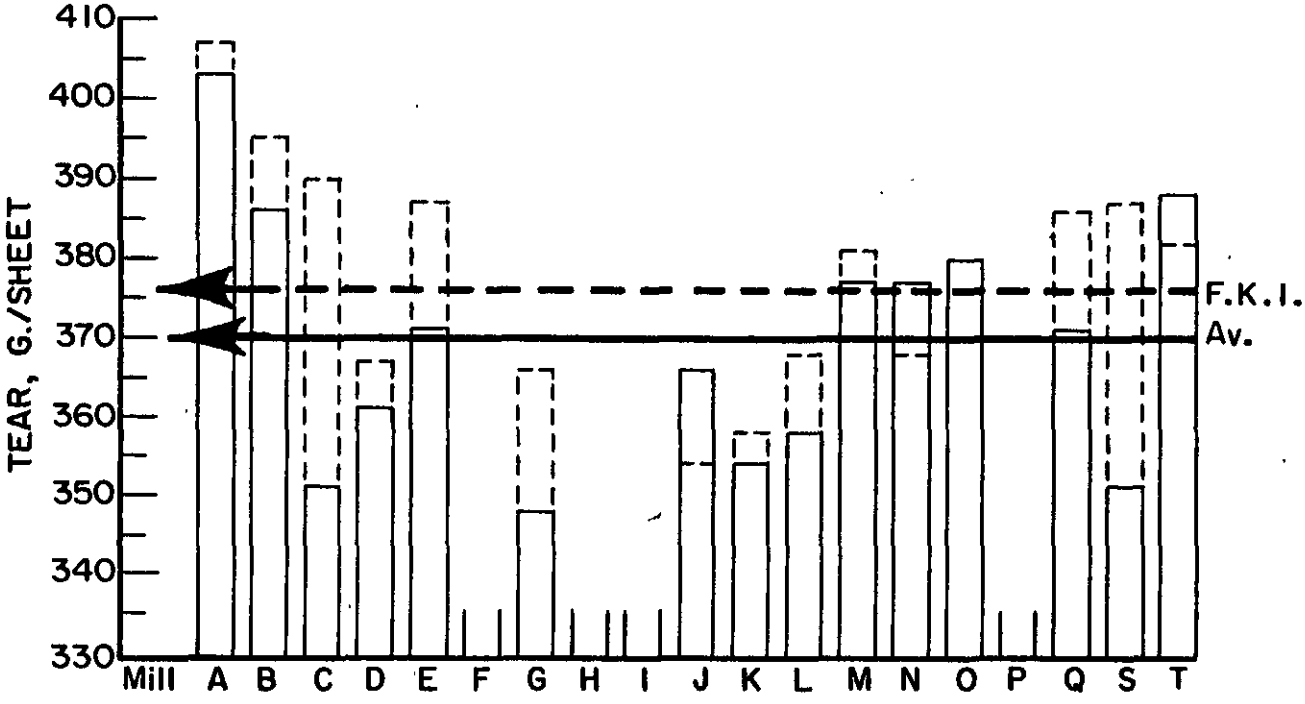

Figure 5

Comparison of Cross-Machine Direction Tear Results for January, 1959

——— Current mill average

- - - - - Cumulative mill average

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 43.3 lb., and the cumulative F.K.I. average basis weight is also 43.3 lb. Hence, the F.K.I. index for basis weight determined in per cent as indicated above is 100.0 and signifies that the current F.K.I. average basis weight is the same as the cumulative F.K.I. average.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills conform to the 42-lb. specification set forth in Rule 41. Mill J had the highest average basis weight of 44.0 lb. which was approximately 4.8% higher than the 42-lb. specification. The lowest average basis weight of 42.5 lb., which was approximately 1.2% higher than the 42-lb. specification, was associated with Mill B.

The amount by which the mills vary from the 42-lb. specification is shown in Table II-A.

A comparison of the current F.K.I. basis weight average for this period with that for the previous period shows that basis weight is slightly lower for the current period.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the current mill averages varied from a low of 12.1 points for Mill A to a high of 13.6 points for Mill Q. The current F.K.I. caliper average is 12.8 points, which is slightly higher than the cumulative F.K.I. average of 12.7 points.

TABLE II-A

PERCENTAGE DEVIATION FROM 42-lb. BASIS WEIGHT

SPECIFICATION

Mill Code	Per Cent
A	+4.0
B	+1.2
C	+3.3
D	+2.9
E	+3.1
F	--
G	+2.1
H	--
I	--
J	+4.8
K	+2.1
L	+3.6
M	+2.9
N	+2.1
O	+3.1
P	--
Q	+2.9
S	+4.5
T	+4.3

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed in Table II and Figure 3 that the current mill averages for bursting strength ranged from a low of 108 for Mills C, Q, and S to a high of 115 for Mills E and N. The current F.K.I. bursting strength average is 111 p.s.i. gage, which is slightly lower than the cumulative F.K.I. average of 112 p.s.i. gage.

A graphic comparison of the Elmendorf tear results shown in Table II for the various mills is given in Figures 4 and 5. These presentations show that Mill O had the highest machine direction tear average of 374 g./sheet, and Mill K had the lowest average of 300 g./sheet. It may be further noted in Table II that the highest cross-machine direction tear average of 403 g./sheet was obtained on the linerboard from Mill A and that the lowest average of 348 g./sheet was associated with Mill G. It may be observed also in Table II that the current F.K.I. averages for machine direction and cross-machine direction Elmendorf tear are both slightly lower than the cumulative F.K.I. averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. average for basis weight is the same as the cumulative F.K.I. average, the current F.K.I. average for caliper is higher than the cumulative F.K.I. average, and the current F.K.I. averages for bursting strength, machine direction and cross-machine direction Elmendorf tear are lower than their respective cumulative F.K.I. averages.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XXI for Mills A through T, respectively.

In addition to the current and cumulative average, the mill factor and mill index are given for each mill. The cumulative mill average is the average test result obtained on the samples submitted by the particular mill for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that the test data include information about the sheet finish. The summarized results for the mills which submitted sample lots during the current period are shown in Table XXI-A.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959

TABLE III

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180831	W.B.	1/12/59	12/13/58	-	45.0	43.2	44.2	13.0	12.3	12.6	121	92	108	416	328	371[a]	448	360	391[a]
180832	W.B.	1/12/59	12/15/58	-	45.0	43.8	44.2	12.9	11.6	12.2	133	91	114	488	360	411[a]	400	344	369[a]
180900	W.B.	1/19/59	12/16/58	-	44.0	42.8	43.4	13.0	11.7	12.1	127	90	106	448	336	384[a]	424	344	376[a]
180901	W.B.	1/19/59	1/ 7/59	-	44.6	42.4	43.7	12.7	11.4	12.2	126	95	108	408	312	370[a]	504	400	434[a]
180903	W.B.	1/19/59	1/ 7/59	-	45.6	43.8	44.2	12.7	11.8	12.3	132	85	114	432	336	370[a]	464	376	413[a]
180904	W.B.	1/19/59	1/ 7/59	-	46.0	43.6	44.3	12.8	11.7	12.3	139	90	113	376	304	349[a]	448	376	409[a]
180902	W.B.	1/19/59	1/ 8/59	-	43.8	42.4	43.0	12.7	11.8	12.3	128	89	111	392	328	355[a]	432	360	401[a]
180945	W.B.	1/26/59	1/ 8/59	-	44.6	42.8	44.0	13.7	12.1	12.6	138	88	114	424	272	351	424	344	385[a]
180946	W.B.	1/26/59	1/11/59	-	44.2	43.0	43.6	12.8	11.5	12.1	150	83	113	368	272	336[a]	432	360	396[a]
180947	W.B.	1/26/59	1/11/59	-	45.2	43.2	43.9	12.7	11.8	12.1	136	101	114	400	296	347[a]	448	384	415[a]
180948	W.B.	1/26/59	1/12/59	-	44.6	43.0	43.8	12.4	11.6	11.9	142	81	114	400	288	348	488	384	423[a]
180949	W.B.	1/26/59	1/13/59	-	44.2	43.4	43.7	12.2	11.5	11.8	127	73	110	432	320	375[a]	464	408	427[a]
180950	W.B.	1/26/59	1/12/59	-	43.6	42.2	42.9	12.5	11.2	11.7	130	100	114	384	312	344[a]	432	360	388[a]
180951	W.B.	1/26/59	1/13/59	-	44.0	42.0	43.2	12.1	11.2	11.7	124	95	113	368	296	326[a]	448	376	413[a]
Current Mill Average:							43.7			12.1			112			360			403
Cumulative Mill Average:							43.0			12.0			113			366			407
Mill Factor, %							101.6			100.8			99.1			98.4			99.0
Mill Index, %							100.9			95.3			100.0			108.4			107.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE IV

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180915	----	1/21/59	1/14/59	2	43.4	40.2	42.5	13.1	12.2	12.8	134	89	109	400	280	342[a]	416	368	386[a]
Current Mill Average:							42.5			12.8			109			342			386
Cumulative Mill Average:							42.4			12.8			113			346			395
Mill Factor, %							100.2			100.0			96.5			98.8			97.7
Mill Index, %							98.2			100.8			97.3			103.0			102.7

TABLE V

MILL C -- 42-LB. LINERBOARD

180851	WF1S	1/13/59	1/ 1/59	1	44.4	41.8	43.4	13.2	12.1	12.7	122	94	108	344	272	313[a]	384	320	351[a]
Current Mill Average:							43.4			12.7			108			313			351
Cumulative Mill Average:							42.9			12.3			112			304			390
Mill Factor, %							101.2			103.3			96.4			103.0			90.0
Mill Index, %							100.2			100.0			96.4			94.3			93.4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE VI

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
130821	W.F.	1/ 8/59	12/18/58	2	45.6	43.2	44.3	13.0	11.1	12.6	123	83	104	384	272	339[a]	424	296	363[a]
130833	W.F.	1/12/59	1/ 5/59	2	45.0	43.8	44.3	13.0	11.6	12.5	122	87	109	344	288	319[a]	408	336	365[a]
130829	W.F.	1/12/59	1/ 7/59	2	42.8	41.8	42.2	12.2	11.4	11.9	124	89	108	368	272	307[a]	456	352	377[a]
130830	W.F.	1/12/59	1/ 7/59	2	42.8	41.8	42.3	12.3	11.3	12.0	121	86	106	328	272	297[a]	400	328	366[a]
130853	W.F.	1/14/59	1/ 8/59	2	44.4	42.2	43.5	13.7	12.6	13.1	136	90	111	360	288	319	384	328	349[a]
130854	W.F.	1/14/59	1/ 8/59	2	44.4	42.4	43.4	13.5	12.2	13.0	133	88	113	328	264	296[a]	416	312	357[a]
130887	W.F.	1/16/59	1/ 8/59	2	43.8	41.8	42.7	13.0	11.8	12.2	130	85	110	384	264	311	384	320	353[a]
130888	W.F.	1/16/59	1/ 8/59	2	43.6	42.0	42.7	12.8	11.6	12.3	136	85	108	352	232	293[a]	400	320	355[a]
Current Mill Average:							43.2			12.4			109			310			361
Cumulative Mill Average:							43.3			12.3			112			310			367
Mill Factor, %							99.8			100.8			97.3			100.0			98.4
Mill Index, %							99.8			97.6			97.3			93.4			96.0

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE VII

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180783	W.F.	1/ 6/59	12/22/58	2	45.0	42.0	43.9	13.1	12.0	12.4	139	88	117	368	280	329	432	320	393[a]
180824	W.F.	1/ 9/59	12/29/58	2	44.0	43.2	43.5	13.2	11.9	12.6	130	86	112	416	312	348[a]	416	328	375[a]
180857	W.F.	1/14/59	1/ 4/59	2	43.8	42.2	43.1	12.9	11.8	12.3	130	90	114	336	248	291[a]	384	320	354[a]
180858	W.F.	1/14/59	1/ 5/59	2	43.6	42.4	43.2	12.6	11.7	12.2	133	96	117	328	272	300[a]	416	312	363[a]
180952	W.F.	1/27/59	1/15/59	2	43.6	41.4	42.7	12.7	11.8	12.2	142	93	117	334	280	319[a]	416	328	371[a]
Current Mill Average:							43.3			12.3			115			317			371
Cumulative Mill Average:							43.3			12.8			113			345			387
Mill Factor, %							100.0			96.1			101.8			91.9			95.9
Mill Index, %							100.0			96.9			102.7			95.5			98.7

TABLE VIII

MILL F -- 42-LB. LINERBOARD

No samples submitted.

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE IX

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180751	WF1S	1/ 2/59	11/27/58	2	44.2	43.0	43.6	15.0	13.4	14.2	122	90	106	376	272	315[a]	392	336	363[a]
180752	WF1S	1/ 2/59	11/28/58	2	44.0	41.8	42.9	13.9	13.1	13.6	127	90	109	368	280	322[a]	376	312	346[a]
180837	WF1S	1/12/59	12/ 7/58	2	44.2	42.4	43.8	14.7	13.5	14.0	123	92	110	323	272	301[a]	376	320	341[a]
180852	WF1S	1/14/59	12/ 8/58	2	43.8	41.2	42.6	14.5	12.9	13.5	127	92	111	352	280	303[a]	376	320	344[a]
180838	WF1S	1/12/59	12/14/58	2	43.6	42.0	42.8	14.0	12.8	13.4	128	96	111	344	272	315[a]	384	320	353[a]
180839	WF1S	1/12/59	12/22/58	2	44.2	42.8	43.6	14.4	13.1	13.9	126	90	107	384	272	307[a]	400	312	353[a]
180896	WF1S	1/19/59	1/ 9/59	2	44.0	41.2	42.2	14.1	13.0	13.5	125	90	109	368	264	317[a]	400	272	334[a]
180897	WF1S	1/19/59	1/10/59	2	44.0	41.2	43.0	14.1	12.9	13.5	133	89	109	400	312	359[a]	408	312	348[a]
180919	WF1S	1/22/59	1/11/59	2	43.8	42.0	42.9	14.2	12.9	13.5	129	93	111	400	264	309[a]	400	320	348[a]
180920	WF1S	1/22/59	1/12/59	2	43.8	41.6	42.6	14.0	13.0	13.5	128	83	109	344	264	319[a]	376	312	347[a]
180938	WF1S	1/26/59	1/13/59	2	44.0	42.0	43.3	14.3	13.1	13.6	128	87	109	384	304	352[a]	408	320	353[a]
180939	WF1S	1/26/59	1/14/59	2	43.4	40.4	42.1	12.8	12.1	12.4	135	81	117	360	264	316[a]	368	312	342[a]
Current Mill Average:							42.9			13.5			110			320			348
Cumulative Mill Average:							42.9			13.5			113			332			366
Mill Factor, %							100.0			100.0			97.3			96.4			95.1
Mill Index, %							99.1			106.3			98.2			96.4			92.6

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE X

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.

No samples submitted.

TABLE XI

MILL I -- 42-LB. LINERBOARD

No samples submitted.

TABLE XII

MILL J -- 42-LB. LINERBOARD

180834	W.F.	1/12/59	12/ 4/58	1	44.8	42.2	43.8	13.6	12.2	12.9	142	90	119	336	256	301[a]	416	328	382[a]
180835	W.F.	1/12/59	12/11/58	1	44.8	42.0	43.9	14.2	12.3	13.2	132	91	113	344	240	301[a]	424	336	374[a]
180836	W.F.	1/12/59	12/18/58	1	45.2	43.4	44.4	14.0	12.5	13.4	123	85	103	360	264	316[a]	384	304	337[a]
180886	W.F.	1/16/59	12/30/58	1	45.0	43.0	44.0	13.9	12.3	13.1	129	81	115	344	232	289[a]	400	344	371[a]
Current Mill Average:							44.0			13.1			112			302			366
Cumulative Mill Average:							43.6			12.7			110			293			354
Mill Factor, %							100.9			103.1			101.8			103.1			103.4
Mill Index, %							101.6			103.1			100.0			91.0			97.3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XIII

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180747	W.F.	1/ 2/59	12/10/58	1	43.0	42.0	42.5	14.2	12.5	13.4	127	78	109	352	224	289	392	304	355[a]
180748	W.F.	1/ 2/59	12/13/58	1	44.4	42.0	43.3	14.0	12.5	13.3	128	83	115	416	272	351	408	344	365[a]
180943	W.F.	1/26/59	1/ 7/59	1	43.0	42.0	42.6	13.2	12.7	13.0	125	90	109	312	224	278[a]	432	320	355[a]
180944	W.F.	1/26/59	1/10/59	1	43.4	42.4	43.0	14.1	13.0	13.5	129	99	115	312	232	282[a]	384	296	341[a]
Current Mill Average:							42.9			13.3			112			300			354
Cumulative Mill Average:							43.0			13.4			115			292			358
Mill Factor, %							99.8			99.3			97.4			102.7			98.9
Mill Index, %							99.1			104.7			100.0			90.4			94.1

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180780	W.F.	1/ 5/59	12/31/58	-	44.0	43.6	43.9	13.3	12.2	12.7	121	91	110	384	304	333[a]	408	312	348[a]
180781	W.F.	1/ 5/59	1/ 1/59	-	41.2	40.2	40.8	13.3	12.1	12.7	118	85	105	344	248	299[a]	360	320	337[a]
180782	W.F.	1/ 5/59	1/ 2/59	-	45.2	44.0	44.7	13.2	12.3	12.8	140	101	117	384	288	345[a]	416	336	373[a]
180865	W.F.	1/15/59	1/ 7/59	-	45.0	43.8	44.1	13.5	12.6	13.0	130	83	105	368	288	323[a]	400	328	360[a]
180866	W.F.	1/15/59	1/ 8/59	-	43.6	41.8	42.5	13.7	12.6	13.3	120	93	104	368	272	312[a]	368	304	339[a]
180867	W.F.	1/15/59	1/ 9/59	-	43.0	42.0	42.5	13.2	12.3	12.8	128	91	110	328	280	309[a]	384	328	354[a]
180891	W.F.	1/19/59	1/14/59	-	45.8	44.8	45.2	13.5	12.2	12.7	138	98	116	376	296	338[a]	408	352	381[a]
180892	W.F.	1/19/59	1/15/59	-	44.2	43.0	43.8	13.1	12.3	12.7	120	88	109	328	248	298[a]	400	304	358[a]
180893	W.F.	1/19/59	1/16/59	-	44.2	43.2	43.8	13.5	12.3	12.9	125	80	107	352	232	305[a]	408	336	372[a]
Current Mill Average:							43.5			12.8			109			318			358
Cumulative Mill Average:							44.2			12.8			110			335			368
Mill Factor, %							98.4			100.0			99.1			94.9			97.3
Mill Index, %							100.5			100.8			97.3			95.8			95.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180784	W.F.	1/ 6/59	12/17/58	-	45.6	43.0	44.3	13.1	11.0	12.6	129	79	109	368	288	332[a]	440	320	387[a]
180785	W.F.	1/ 6/59	12/17/58	-	45.2	43.2	44.1	13.1	12.1	12.6	129	90	110	416	304	363[a]	432	352	394[a]
180786	W.F.	1/ 6/59	12/28/58	-	44.0	42.4	43.1	12.6	11.6	12.2	139	99	120	400	304	348	448	360	399[a]
180787	W.F.	1/ 6/59	12/28/58	-	43.8	41.8	42.9	12.7	11.8	12.2	128	97	110	400	280	343[a]	432	360	393[a]
180876	W.F.	1/15/59	1/ 4/59	-	43.8	42.2	42.9	12.9	11.7	12.3	123	93	108	352	264	299[a]	392	312	343[a]
180877	W.F.	1/15/59	1/ 4/59	-	44.0	42.0	42.9	12.0	11.0	11.5	124	91	107	400	304	335[a]	384	336	362[a]
180878	W.F.	1/15/59	1/ 4/59	-	44.2	42.8	43.5	12.8	11.6	12.0	127	91	107	400	256	329[a]	384	336	363[a]
180879	W.F.	1/15/59	1/ 7/59	-	43.8	41.6	42.5	12.7	11.4	12.0	130	91	113	384	288	332[a]	408	344	376[a]
180894	W.F.	1/19/59	1/ 9/59	-	43.4	41.8	42.6	13.0	12.2	12.6	130	90	107	368	296	337[a]	416	312	377[a]
Current Mill Average:							43.2			12.2			110			335			377
Cumulative Mill Average:							43.6			12.0			114			342			381
Mill Factor, %							99.1			101.7			96.5			98.0			99.0
Mill Index, %							99.8			96.1			98.2			100.9			100.3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XVI

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mcn. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180827	WF1S	1/12/59	1/ 1/59	1	43.8	42.2	42.9	13.4	12.3	13.0	128	97	115	368	256	329[a]	408	328	369[a]
180828	WF1S	1/12/59	1/ 1/59	1	43.6	42.2	42.9	13.6	12.4	13.1	132	86	116	352	288	330	416	344	385[a]
Current Mill Average:							42.9			13.0			115			330			377
Cumulative Mill Average:							43.1			13.2			111			322			368
Mill Factor, %							99.5			98.5			103.6			102.5			102.4
Mill Index, %							99.1			102.4			102.7			99.4			100.3

TABLE XVII

MILL O -- 42-LB. LINERBOARD

180749	W.F.	1/ 2/59	12/ 5/58	-	44.2	43.2	43.7	13.0	12.1	12.5	132	101	114	440	312	374[a]	464	360	393[a]
180750	W.F.	1/ 2/59	12/ 5/58	-	43.6	42.0	42.7	12.2	11.3	11.8	124	84	112	376	304	345[a]	384	344	356[a]
180892	W.F.	1/19/59	1/ 6/59	-	44.2	42.4	43.4	12.8	11.9	12.3	131	103	118	432	344	387[a]	416	360	385[a]
180899	W.F.	1/19/59	1/ 6/59	-	44.2	42.2	43.3	12.5	11.7	12.1	124	89	107	432	320	389[a]	456	352	387[a]
Current Mill Average:							43.3			12.2			113			374			380
Cumulative Mill Average:							43.6			12.4			112			357			370
Mill Factor, %							99.3			98.4			100.9			104.8			102.7
Mill Index, %							100.0			96.1			100.9			112.7			101.1

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
No samples submitted.																			

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

180840	WF1S	1/12/59	1/ 2/59	2	46.2	43.6	44.5	14.2	13.0	13.6	132	91	114	328	256	300[a]	432	344	377[a]
180859	WF1S	1/14/59	1/ 4/59	2	44.0	41.2	42.4	13.2	12.2	12.8	126	87	108	344	272	301[a]	384	312	345[a]
180895	WF1S	1/19/59	1/ 8/59	2	44.8	41.6	43.1	14.4	13.3	13.8	132	86	105	384	296	339[a]	432	352	391[a]
180942	WF1S	1/26/59	1/16/59	2	43.8	41.8	42.8	14.8	13.3	14.0	128	79	106	384	304	339[a]	424	328	370[a]
Current Mill Average:							43.2			13.6			108			320			371
Cumulative Mill Average:							43.4			13.0			113			340			386
Mill Factor, %							99.5			104.6			95.6			94.1			96.1
Mill Index, %							99.8			107.1			96.4			96.4			98.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180868	W.F.	1/15/59	12/11/58	1	44.6	42.4	43.8	13.2	12.2	12.8	124	93	107	352	264	305[a]	384	328	353[a]
180869	W.F.	1/15/59	12/19/58	1	45.0	42.0	43.8	13.7	12.5	13.0	127	89	108	328	272	300[a]	408	312	363[a]
180870	W.F.	1/15/59	12/19/58	1	46.0	43.6	44.8	13.7	12.3	13.1	125	80	105	360	264	315[a]	384	312	353[a]
180871	W.F.	1/15/59	12/19/58	1	45.4	42.0	43.9	13.4	12.1	12.8	126	71	104	320	256	289[a]	368	312	337[a]
180872	W.F.	1/15/59	12/21/58	1	45.0	42.2	43.7	13.5	12.5	13.1	127	77	105	352	288	315[a]	352	312	338[a]
180873	W.F.	1/15/59	12/30/58	1	45.8	43.2	44.5	13.5	12.3	12.9	143	95	116	328	248	289[a]	408	328	361[a]
180874	W.F.	1/15/59	12/30/58	1	45.2	42.0	43.5	13.3	12.2	12.8	136	86	109	312	248	279	360	296	329[a]
180875	W.F.	1/15/59	12/31/58	1	44.0	41.2	42.8	13.4	12.0	12.8	125	91	109	392	288	334[a]	408	352	375[a]
Current Mill Average:							43.9			12.9			108			303			351
Cumulative Mill Average:							43.8			13.2			108			351			387
Mill Factor, %							100.2			97.7			100.0			86.3			90.7
Mill Index, %							101.4			101.6			96.4			91.3			93.4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXI

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180818	W.F.	1/ 8/59	12/14/58	2	43.8	42.6	43.4	12.2	11.5	11.8	135	94	115	352	304	331[a]	400	336	367[a]
180819	W.F.	1/ 8/59	1/ 2/59	2	44.6	43.6	44.0	12.7	11.9	12.3	122	87	109	456	296	361[a]	456	336	379[a]
180820	W.F.	1/ 8/59	1/ 2/59	2	44.0	43.0	43.8	12.5	12.0	12.1	130	90	112	448	296	357	424	352	381[a]
180855	W.F.	1/14/59	1/ 5/59	2	44.6	43.8	44.1	12.5	12.0	12.2	134	91	114	400	312	359[a]	440	352	401[a]
180856	W.F.	1/14/59	1/ 6/59	2	44.6	43.8	44.2	12.9	12.2	12.7	130	87	115	488	320	373[a]	448	352	403[a]
180940	W.F.	1/26/59	1/19/59	2	44.0	42.8	43.4	12.4	11.8	12.0	127	85	114	368	304	335	408	344	381[a]
180941	W.F.	1/26/59	1/19/59	2	44.8	43.0	43.9	12.9	11.9	12.4	128	86	110	416	312	366[a]	448	376	407[a]
Current Mill Average:							43.8			12.2			113			355			388
Cumulative Mill Average:							43.7			12.3			117			330			382
Mill Factor, %							100.2			99.2			96.6			107.6			101.6
Mill Index, %							101.2			96.1			100.9			106.9			103.2

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XXI-A

SUMMARY OF SHEET FINISH DATA

Mill Code	Number of Sample Lots		
	Water Finish	Water Finish One Side	Other
A	14		
B			1[a]
C		1	
D	8		
E	5		
F	No samples submitted.		
G		12	
H	No samples submitted.		
I	No samples submitted.		
J	4		
K	4		
L	9		
M	9		
N		2	
O	4		
P	No samples submitted.		
Q		4	
S	8		
T	7		
Totals	72	19	1

[a] Unidentified.

PART II. COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. Mill test conditions are shown in Table XXII, where it may be noted that the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the preconditioning and conditioning time periods varied considerably.

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of differences between Institute and mill test results is given in Table XXIV for the current period and the two previous periods.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. Table XXIII shows the over-all average difference between Institute and mill results for each of these tests based on the data for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the over-all average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

TABLE XXII

PRECONDITIONING AND CONDITIONING DATA FOR THE MILL TESTS

Mill Code	Preconditioning R.H., %	Preconditioning Temperature, °F.	Preconditioning Time, hr.	Conditioning R.H., %	Conditioning Temperature, °F.	Conditioning Time, hr.
A		None		40-49	72-73	48
B		None		50	73	24
C		None		45	64	--
D	50	73	24	50	73	24
E		None		50	73-75	24
F	No samples submitted.					
G	50	72	24		None	
H	No samples submitted.					
I	No samples submitted.					
J	46-72	60-78	0.5	50	70-73	24-72
K		None		48-52	75-88	--
L	34-36	78-79	8	48-52	71-73	16
M	50-51	72-73	48-192	50	73	--
N		None		39-44	80-86	--
O		None		50	73	0.5
P	No samples submitted.					
Q	50	70-72	120	50-51	70-72	120
S	50	73	24	50	73	24
T		None		50	73	24

TABLE XXIII

SUMMARY OF TEST RESULT COMPARISONS (Average Mill and Institute Results)

Mills*	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T
No. Samples Compared	14	1	1	8	5	0	12	0	0	4	4	9	9	2	4	0	4	8	7
Basis Weight																			
Institute	43.7	42.5	43.4	43.2	43.3		42.9			44.0	42.9	43.5	43.2	42.9	43.3		43.2	43.9	43.8
Mill	42.6	41.7	42.4	42.9	42.6		43.6			43.6	42.1	43.3	42.9	41.8	43.2		42.9	43.7	43.1
Av. Diff.**	-1.1	-0.8	-1.0	-0.3	-0.7		+0.7			-0.4	-0.8	-0.2	-0.3	-1.1	-0.1		-0.3	-0.2	-0.7
Max. Diff.***	-1.5	-0.8	-1.0	-0.8	-0.9		+1.7			-0.8	-1.3	+1.1	+1.5	-1.1	-0.7		-0.7	-0.5	-1.2
Caliper																			
Institute	12.1	12.8	12.7	12.4	12.3		13.5			13.1	13.3	12.8	12.2	13.0	12.2		13.6	12.9	12.2
Mill	11.6	12.4	12.3	12.1	12.1		13.1			13.1	12.8	12.4	12.0	12.3	11.8		13.2	12.5	11.7
Av. Diff.**	-0.5	-0.4	-0.4	-0.3	-0.2		-0.4			0.0	-0.5	-0.4	-0.2	-0.7	-0.4		-0.4	-0.4	-0.5
Max. Diff.***	-0.7	-0.4	-0.4	-0.8	-0.3		-0.9			-0.2	-0.6	-0.7	-0.4	-0.7	-0.5		-0.5	-0.7	-0.8
Bursting Strength																			
Institute	112	109	108	109	115		110			112	112	109	110	115	113		108	108	113
Mill	114	110	105	108	114		112			117	111	109	113	115	116		110	110	115
Av. Diff.**	+2	+1	-3	-1	-1		+2			+5	-1	0	+3	0	+3		+2	+2	+2
Max. Diff.***	+9	+1	-3	+6	-5		+11			+8	-6	+7	+9	±1	+9		+3	+4	+9
Tearing Strength, in.																			
Institute	360	342	313	310	317		320			302	300	318	335	330	374		320	303	355
Mill	312	--	250	277	335		324			307	281	298	339	310	356		310	287	344
Av. Diff.**	-48	--	-63	-33	+18		+4			+5	-19	-20	+4	-20	-18		-10	-16	-11
Max. Diff.***	-87	--	-63	-46	+41		+40			+14	-66	-34	+38	-22	-45		-56	-53	-40
Tearing Strength, across																			
Institute	403	386	351	361	371		348			366	354	358	377	377	380		371	351	388
Mill	381	--	345	337	384		370			374	370	334	385	386	379		375	363	396
Av. Diff.**	-22	--	-6	-24	+13		+22			+8	+16	-24	+8	+9	-1		+4	+12	+8
Max. Diff.***	59	--	-6	-31	+34		+67			+20	+27	-36	-45	+21	-29		+39	+29	+28

* Comparison based on averages involved only those samples on which mill test data were submitted.

** Average difference is the difference between the Institute mill average and the mill average based on mill test data.

*** Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXIV

COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Difference, Per Cent

Mill	Period	Basis Weight	Caliper	Burst	Tear, in	Tear, across
A	Current	-3	-4	+2	-13	-5
	139th	-3	-5	+3	-13	-6
	138th	-3	-4	+3	-12	-3
B	Current	-2	-3	+0.9	—	—
	139th	—	—	—	—	—
	138th	—	—	—	—	—
C	Current	-2	-3	-3	-20	-2
	139th	—	—	—	—	—
	138th	-2	-2	-0.9	+10	+0.8
D	Current	-0.7	-2	-0.9	-11	-7
	139th	-0.9	-4	+0.9	-13	-10
	138th	-0.2	-2	0	-11	-6
E	Current	-2	-2	-0.9	+6	+4
	139th	-0.9	-2	-0.9	-1	+1
	138th	-1	-2	+0.9	+8	+7
F	Current	—	—	—	—	—
	139th	—	—	—	—	—
	138th	-2	-5	+0.9	-10	-9
G	Current	+2	-3	+2	+1	+6
	139th	+2	-2	+6	+2	+6
	138th	+0.5	-0.7	+0.9	-0.6	+4
H	Current	—	—	—	—	—
	139th	—	—	—	—	—
	138th	—	—	—	—	—
I	Current	—	—	—	—	—
	139th	—	—	—	—	—
	138th	—	—	—	—	—
J	Current	-0.9	0	+4	+2	+2
	139th	-2	+0.8	+2	-4	+6
	138th	-3	0	+2	-4	+2
K	Current	-2	-4	-0.9	-6	+5
	139th	-2	-2	-3	-9	-2
	138th	-3	-4	-3	-9	+0.8
L	Current	-0.5	-3	0	-6	-7
	139th	-3	-3	-2	-1	-4
	138th	-2	-2	0	-4	-5
M	Current	-0.7	-2	+3	+1	+2
	139th	-2	-2	0	-9	-2
	138th	-2	-3	-0.9	-8	+1
N	Current	-3	-5	0	-6	+2
	139th	-1	-2	+0.9	+7	+3
	138th	—	—	—	—	—
O	Current	-0.2	-3	+3	-5	-3
	139th	+0.2	-4	+0.9	-6	+0.5
	138th	-1	-0.8	-0.9	-8	-3
P	Current	—	—	—	—	—
	139th	-2	-3	-4	-14	-5
	138th	-2	-5	-5	-13	-5
Q	Current	-0.7	-3	+2	-3	+1
	139th	-0.2	-2	-5	-11	-2
	138th	-1	-1	-3	-1	+6
S	Current	-0.5	-3	+2	-5	+3
	139th	-0.9	-4	-3	-9	-0.3
	138th	-2	-2	-2	-5	+5
T	Current	-2	-4	+2	-3	+2
	139th	-2	-2	-2	-6	-2
	138th	-1	-2	0	-0.9	0

It may be noted in Table XXIV that for the current period the largest average difference (per cent) between the average basis weight results of the Institute and those of a given mill on corresponding samples was three per cent. By comparison, the largest average difference (per cent) noted for the previous two periods was also three per cent. Further, it may be noted that the average basis weight result for Mill G was higher than that for the Institute, and the average results for the other mills were lower. The variations of 1 lb. or more for Mills A, C, and N may be excessive.

The maximum variation in caliper for the current period was five per cent. This was the same as the maximum variation for the previous two periods. Compared with the Institute's results, the average test result for Mill J was the same, and the average test results for the other mills were lower. The variations of 0.5 point or more for Mill A, K, N, and T may be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of four per cent for the current period. The average results for Mills A, B, G, J, M, O, Q, S, and T were higher than those for the Institute, the average results for Mills L and N were the same, and the average results for the other mills were lower. None of the variations appear to be exceptionally large. Agreement between Institute and mill results is very good.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills E, G, J, and M were higher than those for the Institute, and the average results for the other mills were lower.

The maximum variation for the current period was twenty per cent. Agreement between the Institute and mill results was good in most cases. However, several mills--namely, A, C, and D--were associated with differences greater than ten per cent which may be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills E, G, J, K, M, N, Q, S, and T were higher than those for the Institute, and the average results for the other mills were lower. The maximum variation for the current period was seven per cent. As in the case of the machine direction results, agreement between Institute and mill results was good.

The comparisons of Institute and mill data for individual sample lots are given in Tables XXV to XLIII for the various mills. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180831	W.B.	12/13/58	-	44.2	42.7	-1.5	12.6	12.0	-0.6	108	110	+2	371[a]	336	-35	391[a]	392	+ 1
180832	W.B.	12/15/58	-	44.2	43.2	-1.0	12.2	11.7	-0.5	114	111	-3	411[a]	353	-58	369[a]	357	-12
180900	W.B.	12/16/58	-	43.4	42.6	-0.8	12.1	11.7	-0.4	106	110	+4	384[a]	339	-45	376[a]	353	-23
180901	W.B.	1/ 7/59	-	43.7	42.9	-0.8	12.2	11.5	-0.7	108	112	+4	370[a]	299	-71	434[a]	375	-59
180903	W.B.	1/ 7/59	-	44.2	43.2	-1.0	12.3	11.8	-0.5	114	119	+5	370[a]	300	-70	413[a]	384	-29
180904	W.B.	1/ 7/59	-	44.3	43.3	-1.0	12.3	11.8	-0.5	113	122	+9	349[a]	329	-20	409[a]	387	-22
180902	W.B.	1/ 8/59	-	43.0	41.9	-1.1	12.3	11.7	-0.6	111	109	-2	355[a]	297	-58	401[a]	380	-21
180945	W.B.	1/ 8/59	-	44.0	42.6	-1.4	12.6	11.9	-0.7	114	114	0	351	275	-76	385[a]	368	-17
180946	W.B.	1/11/59	-	43.6	42.5	-1.1	12.1	11.4	-0.7	113	116	+3	336[a]	323	-13	396[a]	396	0
180947	W.B.	1/11/59	-	43.9	42.6	-1.3	12.1	11.6	-0.5	114	112	-2	347[a]	303	-44	415[a]	388	-27
180948	W.B.	1/12/59	-	43.8	42.4	-1.4	11.9	11.3	-0.6	114	118	+4	348	307	-41	423[a]	380	-43
180949	W.B.	1/13/59	-	43.7	42.5	-1.2	11.8	11.2	-0.6	110	112	+2	375[a]	288	-87	427[a]	383	-44
180950	W.B.	1/12/59	-	42.9	42.0	-0.9	11.7	11.2	-0.5	114	116	+2	344[a]	315	-29	388[a]	395	+ 7
180951	W.B.	1/13/59	-	43.2	42.4	-0.8	11.7	11.3	-0.4	113	117	+4	326[a]	312	-14	413[a]	390	-23
Current Mill Average:				43.7	42.6	-1.1	12.1	11.6	-0.5	112	114	+2	360	312	-48	403	381	-22

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180915	----	1/14/59	2	42.5	41.7	-0.8	12.8	12.4	-0.4	109	110	+1	342[a]			386[a]		
Current Mill Average:				42.5	41.7	-0.8	12.8	12.4	-0.4	109	110	+1	342			386		

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

180851	WF1S	1/ 1/59	1	43.4	42.4	-1.0	12.7	12.3	-0.4	108	105	-3	313[a]	250	-63	351[a]	345	-6
Current Mill Average:				43.4	42.4	-1.0	12.7	12.3	-0.4	108	105	-3	313	250	-63	351	345	-6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180821	W.F.	12/18/58	2	44.3	43.9	-0.4	12.6	12.3	-0.3	104	110	+6	339[a]	305	-34	363[a]	347	-16
180833	W.F.	1/ 5/59	2	44.3	43.9	-0.4	12.5	12.2	-0.3	109	109	0	319[a]	312	- 7	365[a]	349	-16
180829	W.F.	1/ 7/59	2	42.2	42.2	0.0	11.9	11.7	-0.2	108	106	-2	307[a]	281	-26	377[a]	346	-31
180830	W.F.	1/ 7/59	2	42.3	42.3	0.0	12.0	11.6	-0.4	106	106	0	297[a]	269	-28	366[a]	339	-27
180853	W.F.	1/ 8/59	2	43.5	42.7	-0.8	13.1	12.3	-0.8	111	111	0	319	275	-44	349[a]	324	-25
180854	W.F.	1/ 8/59	2	43.4	43.1	-0.3	13.0	12.7	-0.3	113	109	-4	296[a]	258	-38	357[a]	326	-31
180887	W.F.	1/ 8/59	2	42.7	42.6	-0.1	12.2	12.0	-0.2	110	109	-1	311	265	-46	353[a]	330	-23
180888	W.F.	1/ 8/59	2	42.7	42.6	-0.1	12.3	12.0	-0.3	108	109	+1	293[a]	253	-40	355[a]	337	-18
Current Mill Average:				43.2	42.9	-0.3	12.4	12.1	-0.3	109	108	-1	310	277	-33	361	337	-24

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180783	W.F.	12/22/58	2	43.9	43.0	-0.9	12.4	12.2	-0.2	117	112	-5	329	332	+ 3	393[a]	391	- 2
180824	W.F.	12/29/58	2	43.5	42.7	-0.8	12.6	12.3	-0.3	112	112	0	348[a]	337	-11	375[a]	380	+ 5
180857	W.F.	1/ 4/59	2	43.1	42.6	-0.5	12.3	12.0	-0.3	114	116	+2	291[a]	332	+41	354[a]	388	+34
180858	W.F.	1/ 5/59	2	43.2	42.5	-0.7	12.2	12.3	+0.1	117	116	-1	300[a]	328	+28	363[a]	378	+15
180952	W.F.	1/15/59	2	42.7	42.4	-0.3	12.2	11.9	-0.3	117	114	-3	319[a]	346	+27	371[a]	383	+12
Current Mill average:				43.3	42.6	-0.7	12.3	12.1	-0.2	115	114	-1	317	335	+18	371	384	+13

TABLE XXX

MILL F -- 42-LB. LINERBOARD

No samples submitted

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180751	WF1S	11/27/58	2	43.6	44.2	+0.6	14.2	13.8	-0.4	106	110	+ 4	315[a]	336	+21	363[a]	379	+16
180752	WF1S	11/28/58	2	42.9	43.3	+0.4	13.6	13.0	-0.6	109	111	+ 2	322[a]	343	+21	346[a]	403	+57
180837	WF1S	12/ 7/58	2	43.8	44.3	+0.5	14.0	13.5	-0.5	110	108	- 2	301[a]	341	+40	341[a]	408	+67
180852	WF1S	12/ 8/58	2	42.6	42.3	-0.3	13.5	12.8	-0.7	111	110	- 1	303[a]	320	+17	344[a]	382	+38
180838	WF1S	12/14/58	2	42.8	43.1	+0.3	13.4	12.5	-0.9	111	118	+ 7	315[a]	338	+23	353[a]	391	+38
180839	WF1S	12/22/58	2	43.6	43.7	+0.1	13.9	13.0	-0.9	107	118	+11	307[a]	323	+16	353[a]	370	+17
180896	WF1S	1/ 9/59	2	42.2	43.4	+1.2	13.5	13.2	-0.3	109	108	- 1	317[a]	288	-29	334[a]	356	+22
180897	WF1S	1/10/59	2	43.0	44.7	+1.7	13.5	13.2	-0.3	109	112	+ 3	359[a]	355	- 4	348[a]	368	+20
180919	WF1S	1/11/59	2	42.9	43.7	+0.8	13.5	13.2	-0.3	111	109	- 2	309[a]	272	-37	348[a]	327	-21
180920	WF1S	1/12/59	2	42.6	44.1	+1.5	13.5	13.3	-0.2	109	109	0	319[a]	308	-11	347[a]	348	+ 1
180938	WF1S	1/13/59	2	43.3	43.7	+0.4	13.6	13.5	-0.1	109	110	+ 1	352[a]	344	- 8	353[a]	356	+ 3
180939	WF1S	1/14/59	2	42.1	42.7	+0.6	12.4	12.0	-0.4	117	117	0	316[a]	318	+ 2	342[a]	358	+16
Current Mill average:				42.9	43.6	+0.7	13.5	13.1	-0.4	110	112	+ 2	320	324	+ 4	348	370	+22

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.

No samples submitted

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

No samples submitted

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

180834	W.F.	12/ 4/58	1	43.8	43.8	0.0	12.9	13.0	+0.1	119	118	- 1	301[a]	303	+ 2	382[a]	385	+ 3
180835	W.F.	12/11/58	1	43.9	43.5	-0.4	13.2	13.0	-0.2	113	121	+ 8	301[a]	305	+ 4	374[a]	382	+ 8
180836	W.F.	12/18/58	1	44.4	43.6	-0.8	13.4	13.4	0.0	103	108	+ 5	316[a]	316	0	337[a]	357	+20
180886	W.F.	12/30/58	1	44.0	43.4	-0.6	13.1	13.2	+0.1	115	120	+ 5	289[a]	303	+14	371[a]	374	+ 3
Current Mill Average:				44.0	43.6	-0.4	13.1	13.1	0.0	112	117	+ 5	302	307	+ 5	366	374	+ 8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180747	W.F.	12/10/58	1	42.5	42.3	-0.2	13.4	13.0	-0.4	109	109	0	289	285	- 4	355[a]	366	+11
180748	W.F.	12/13/58	1	43.3	42.0	-1.3	13.3	12.9	-0.4	115	113	-2	351	285	-66	365[a]	376	+11
180943	W.F.	1/ 7/59	1	42.6	41.7	-0.9	13.0	12.4	-0.6	109	112	+3	278[a]	278	0	355[a]	372	+17
180944	W.F.	1/10/59	1	43.0	42.4	-0.6	13.5	13.0	-0.5	115	109	-6	282[a]	278	- 4	341[a]	368	+27
Current Mill Average:				42.9	42.1	-0.8	13.3	12.8	-0.5	112	111	-1	300	281	-19	354	370	+16

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

180780	W.F.	12/31/58	-	43.9	43.6	-0.3	12.7	12.4	-0.3	110	108	-2	333[a]	299	-34	348[a]	321	-27
180781	W.F.	1/ 1/59	-	40.8	40.8	0.0	12.7	12.3	-0.4	105	109	+4	299[a]	275	-24	337[a]	309	-28
180782	W.F.	1/ 2/59	-	44.7	44.1	-0.6	12.8	12.2	-0.6	117	111	-6	345[a]	316	-29	373[a]	337	-36
180865	W.F.	1/ 7/59	-	44.1	43.5	-0.6	13.0	12.6	-0.4	105	112	+7	323[a]	313	-10	360[a]	331	-29
180866	W.F.	1/ 8/59	-	42.5	43.6	+1.1	13.3	13.0	-0.3	104	103	-1	312[a]	291	-21	339[a]	336	- 3
180867	W.F.	1/ 9/59	-	42.5	42.5	0.0	12.8	12.5	-0.3	110	105	-5	309[a]	291	-18	354[a]	320	-34
180891	W.F.	1/14/59	-	45.2	44.2	-1.0	12.7	12.1	-0.6	116	114	-2	338[a]	327	-11	381[a]	361	-20
180892	W.F.	1/15/59	-	43.8	43.6	-0.2	12.7	12.1	-0.6	109	105	-4	298[a]	288	-10	358[a]	349	- 9
180893	W.F.	1/16/59	-	43.8	43.6	-0.2	12.9	12.2	-0.7	107	109	+2	305[a]	280	-25	372[a]	337	-35
Current Mill Average:				43.5	43.3	-0.2	12.8	12.4	-0.4	109	109	0	318	298	-20	358	334	-24

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXXVII

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180784	W.F.	12/17/58	-	44.3	43.7	-0.6	12.6	12.3	-0.3	109	109	0	332[a]	343	+11	387[a]	388	+ 1
180785	W.F.	12/17/58	-	44.1	43.4	-0.7	12.6	12.5	-0.1	110	105	-5	363[a]	364	+ 1	394[a]	408	+14
180786	W.F.	12/28/58	-	43.1	42.5	-0.6	12.2	11.9	-0.3	120	121	+1	348	328	-20	399[a]	392	- 7
180787	W.F.	12/28/58	-	42.9	42.2	-0.7	12.2	12.0	-0.2	110	113	+3	343[a]	340	- 3	393[a]	399	+ 6
180876	W.F.	1/ 4/59	-	42.9	42.4	-0.5	12.3	12.1	-0.2	108	114	+6	299[a]	337	+38	343[a]	339	-45
180877	W.F.	1/ 4/59	-	42.9	42.4	-0.5	11.5	11.4	-0.1	107	116	+9	335[a]	337	+ 2	362[a]	376	+14
180878	W.F.	1/ 4/59	-	43.5	43.1	-0.4	12.0	11.8	-0.2	107	111	+4	329[a]	348	+19	363[a]	371	+ 8
180879	W.F.	1/ 7/59	-	42.5	42.1	-0.4	12.0	11.9	-0.1	113	117	+4	332[a]	320	-12	376[a]	372	- 4
180894	W.F.	1/ 9/59	-	42.6	44.1	+1.5	12.6	12.2	-0.4	107	109	+2	337[a]	332	- 5	377[a]	372	- 5
Current Mill Average:				43.2	42.9	-0.3	12.2	12.0	-0.2	110	113	+3	335	339	+ 4	377	385	+ 8

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

180827	WF1S	1/ 1/59	1	42.9	41.8	-1.1	13.0	12.3	-0.7	115	114	-1	329[a]	313	-16	369[a]	390	+21
180828	WF1S	1/ 1/59	1	42.9	41.8	-1.1	13.1	12.3	-0.7	116	117	+1	330	308	-22	385[a]	382	- 3
Current Mill Average:				42.9	41.8	-1.1	13.0	12.3	-0.7	115	115	0	330	310	-20	377	386	+ 9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180749	W.F.	12/ 5/58	-	43.7	43.9	+0.2	12.5	12.0	-0.5	114	115	+ 1	374[a]	369	- 5	393[a]	404	+11
180750	W.F.	12/ 5/58	-	42.7	42.7	0.0	11.8	11.7	-0.1	112	114	+ 2	345[a]	346	+ 1	356[a]	372	+16
180898	W.F.	1/ 6/59	-	43.4	42.7	-0.7	12.3	11.8	-0.5	118	119	+ 1	387[a]	342	-45	385[a]	356	-29
180899	W.F.	1/ 6/59	-	43.3	43.2	-0.1	12.1	11.9	-0.2	107	116	+ 9	389[a]	367	-22	387[a]	383	- 4
Current Mill Average:				43.3	43.2	-0.1	12.2	11.8	-0.4	113	116	+ 3	374	356	-18	380	379	- 1

TABLE XL

MILL P -- 42-LB. LINERBOARD

No samples submitted

TABLE XLI

MILL Q -- 42-LB. LINERBOARD

180840	WF1S	1/ 2/59	2	44.5	43.8	-0.7	13.6	13.3	-0.3	114	117	+ 3	300[a]	310	+10	377[a]	372	- 5
180859	WF1S	1/ 4/59	2	42.4	42.2	-0.2	12.8	12.5	-0.3	108	108	0	301[a]	317	+16	345[a]	384	+39
180895	WF1S	1/ 8/59	2	43.1	42.9	-0.2	13.8	13.6	-0.2	105	106	+ 1	339[a]	329	-10	391[a]	400	+ 9
180942	WF1S	1/16/59	2	42.8	42.8	0.0	14.0	13.5	-0.5	106	108	+ 2	339[a]	283	-56	370[a]	345	-25
Current Mill Average:				43.2	42.9	-0.3	13.6	13.2	-0.4	108	110	+ 2	320	310	-10	371	375	+ 4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JANUARY 1 THROUGH JANUARY 31, 1959 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180868	W.F.	12/11/58	1	43.8	43.7	-0.1	12.8	12.6	-0.2	107	110	+3	305[a]	287	-18	353[a]	358	+ 5
180869	W.F.	12/19/58	1	43.8	43.8	0.0	13.0	12.6	-0.4	108	108	0	300[a]	278	-22	363[a]	364	+ 1
180870	W.F.	12/19/58	1	44.8	44.5	-0.3	13.1	12.7	-0.4	105	109	+4	315[a]	309	- 6	353[a]	377	+24
180871	W.F.	12/19/58	1	43.9	43.8	-0.1	12.8	12.4	-0.4	104	108	+4	289[a]	287	- 2	337[a]	365	+28
180872	W.F.	12/21/58	1	43.7	43.8	+0.1	13.1	12.8	-0.3	105	107	+2	315[a]	273	-42	338[a]	367	+29
180873	W.F.	12/30/58	1	44.5	44.0	-0.5	12.9	12.5	-0.4	116	114	-2	289[a]	302	+13	361[a]	374	+13
180874	W.F.	12/30/58	1	43.5	43.0	-0.5	12.8	12.1	-0.7	109	110	+1	279	281	+ 2	329[a]	353	+24
180875	W.F.	12/31/58	1	42.8	42.9	+0.1	12.8	12.3	-0.5	109	111	+2	334[a]	281	-53	375[a]	348	-27
Current Mill Average:				43.9	43.7	-0.2	12.9	12.5	-0.4	108	110	+2	303	287	-16	351	363	+12

TABLE XLIII

MILL T -- 42-LB. LINERBOARD

180818	W.F.	12/14/58	2	43.4	43.0	-0.4	11.8	11.6	-0.2	115	119	+4	331[a]	339	+ 8	367[a]	364	- 3
180819	W.F.	1/ 2/59	2	44.0	42.8	-1.2	12.3	11.5	-0.8	109	113	+4	361[a]	321	-40	379[a]	395	+16
180820	W.F.	1/ 2/59	2	43.8	43.0	-0.8	12.1	11.7	-0.4	112	112	0	357	328	-29	381[a]	383	+ 2
180855	W.F.	1/ 5/59	2	44.1	42.9	-1.2	12.2	11.6	-0.6	114	115	+1	359[a]	322	-37	401[a]	393	- 8
180856	W.F.	1/ 6/59	2	44.2	43.1	-1.1	12.7	12.0	-0.7	115	114	-1	373[a]	366	- 7	403[a]	431	+28
180940	W.F.	1/19/59	2	43.4	43.1	-0.3	12.0	11.6	-0.4	114	115	+1	335	370	+35	381[a]	400	+19
180941	W.F.	1/19/59	2	43.9	43.7	-0.2	12.4	12.1	-0.3	110	119	+9	366[a]	365	- 1	407[a]	404	- 3
Current Mill Average:				43.8	43.1	-0.7	12.2	11.7	-0.5	113	115	+2	355	344	-11	388	396	+ 8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

THE INSTITUTE OF PAPER CHEMISTRY

W. N. Hubert

W. N. Hubert, Research Aide

R C McKee

R. C. McKee, Chief
Container Section